SECTION 2

Waste Disposal Stream Analysis

Goal of This Planning Element:

To determine the amount and composition of the solid waste generated within each community or area to have a sound information foundation upon which to base solid waste management decisions and to determine if statewide and local goals have been met.

This section provides information about the amount of waste generated and disposed from residential, commercial, and industrial sectors in the City of Atlanta. It also discusses the volume of construction and demolition (C&D) debris and yard trimmings generated in the City. This waste stream analysis provides information on the types and amounts of waste disposed, potential fluctuations in quantities due to seasonal variations, fluctuations in quantities due to waste-generating disasters, waste disposal projections for the 10-year planning period, and waste disposal reduction goals.

The City of Atlanta collects residential single- and multi-family solid waste, waste from City buildings and facilities, some C&D debris, and yard trimmings from residents and City-owned properties; and performs various beautification services. Private hauling companies collect some residential multi-family solid waste; all commercial, non-residential solid waste and yard trimmings; and C&D debris in the City of Atlanta.

Complete data for the various waste generating sectors in the City of Atlanta were not always available. Therefore, years with the most data available were used (specifically 2001 through 2003). In gathering available data, it became apparent that the City needed to collect better data associated with each generating sector – particularly the multi-family residential waste sector serviced by private haulers, the commercial waste sector, yard trimmings collected by private companies, and tires collected by private companies. The City will consider implementing a reporting system to determine who collects waste within the City, where the waste is sent (either through disposal or recycling facilities), and how much waste is disposed or recycled. More accurate data will help the City better manage and plan for its solid waste management and waste reduction goals for the planning period.

2.1 Inventory of Waste Stream Generators

Table 2-1 lists the amount of waste generated by sector in 2003 for the City of Atlanta. It should be noted that the generation rate is disposal plus recycling. Complete waste generation data were not available for 2004. The City had previously announced projected tonnage for 2004 in various public meetings held throughout the year; however, the projection was used for informational purposes only and did not include an accurate account of waste tonnage, primarily because complete tonnage reports for 2004 were not available until several months into 2005. Sections 2.1.1 through 2.1.8 provide a detailed description and additional information on each generating sector.

TABLE 2-1
Waste Generated by Sector in 2003

Generating Sector	City of Atlanta (tons)			Private Hauling Companies (tons)			City of Atlanta + Private Hauling Companies (tons)	
	Disposed	**Recycled**	**Total Generated (Disposed + Recycled)**	**Disposed**	**Recycled**	**Total Generated (Disposed + Recycled)**	**Disposed**	**Recycled**
Residential	146,101[1]	6,985	153,086	36,422[2]	N/A[3]	36,422	182,523	6,985
Commercial/Industrial/ Institutional	741[4]	N/A[5]	741	358,814[6]	N/A[7]	NA[8]	359,555	N/A
Construction and Demolition Debris	45,521	0[9]	45,521	49,820	0[9]	49,820	95,341	0
Yard Trimmings	0	20,837	20,837	N/A[10]	N/A[11]	NA	N/A	20,837
Used Tires	0	88	88	1,144	4,601[12]	5,745[13]	1,144	4,689
Subtotal	**192,363**	**27,910**	**220,273**	**446,200**	**4,601**	**450,801**	**638,563**	**32,511**
Water and Wastewater Treatment Plant Sludge	46,984[14]	71,741[15]	118,725	0	0	0	46,984	71,741
Total	**239,347**	**99,651**	**338,998**	**446,200**	**4,601**	**450,801**	**685,547**	**104,252**

Notes:

[1] Includes all single-family residences and some multi-family residences that the City serves.

[2] Includes remainder of multi-family residences that the City does not serve.

[3] N/A = not available. Some residential recycling is provided by private waste companies; however, recycling data were not available.

[4] Institutional solid waste only.

[5] Although there is recycling in some City buildings, recycling data was not available.

[6] From Georgia Environmental Protection Division (EPD) Private Disposal Landfill Reports. Some quarters were missing data.

[7] Commercial recycling data was not available from private haulers or other sources for the City of Atlanta.

[8] NA = not applicable. Since commercial recycling data was not available, the total generation of commercial solid waste in the City is not known.

TABLE 2-1
Waste Generated by Sector in 2003

Generating Sector	City of Atlanta (tons)			Private Hauling Companies (tons)			City of Atlanta + Private Hauling Companies (tons)	
	Disposed	Recycled	Total Generated (Disposed + Recycled)	Disposed	Recycled	Total Generated (Disposed + Recycled)	Disposed	Recycled

Notes: (cont.)

[9] The City of Atlanta does not recycle C&D debris. From phone interviews, private C&D landfills that serve the City do not recycle or separate C&D debris.

[10] Yard trimmings disposal data was not available through the Georgia DCA or Georgia EPD.

[11] No data was available. In phone interviews with three major landscaping companies that operate in the City, yard trimmings are either mulched/composted or sent to C&D landfills.

[12] Based on national trend of 80.4% recycling and applied to population in City of Atlanta (Tire data for City of Atlanta and Georgia was not available). From "U.S. Scrap Tire Markets: 2003 Edition," Rubber Manufacturers Association, July 2004).

[13] Based on tire generation rate per person for entire U.S. and applied to population in City of Atlanta (Tire data for City of Atlanta and Georgia was not available). From "U.S. Scrap Tire Markets: 2003 Edition," Rubber Manufacturers Association, July 2004).

[14] Also includes grit and other non-sludge waste, such as catch basin trash, rocks, wood, branches, gravel, etc.

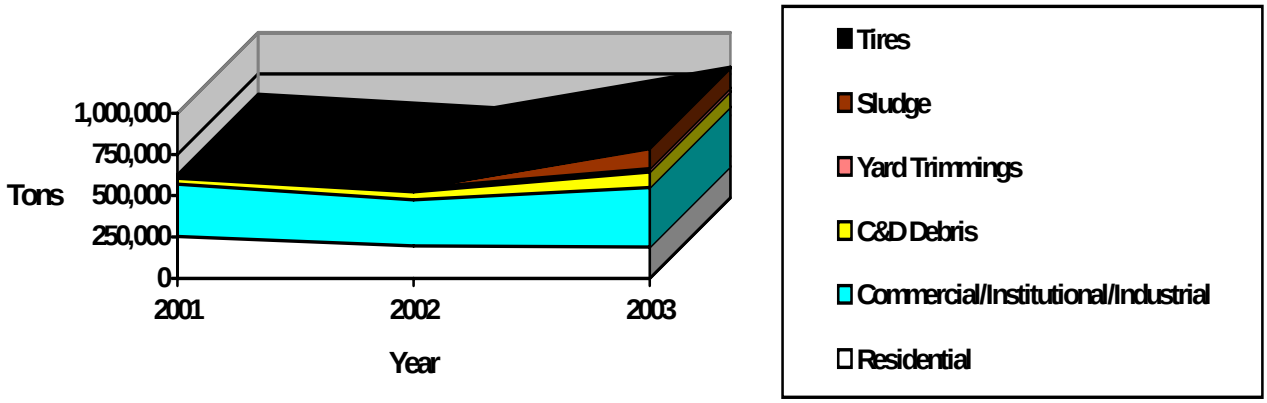
[15] Sludge is incinerated, and the ash is sent to a brick-making facility.

Sources of Data:

City of Atlanta, Department of Public Works, Office of Solid Waste Services records
City of Atlanta, Department of Watershed Management records
Georgia Department of Community Affairs
Georgia Environmental Protection Division private disposal landfill reports
Rubber Manufacturers Association
Phone interviews

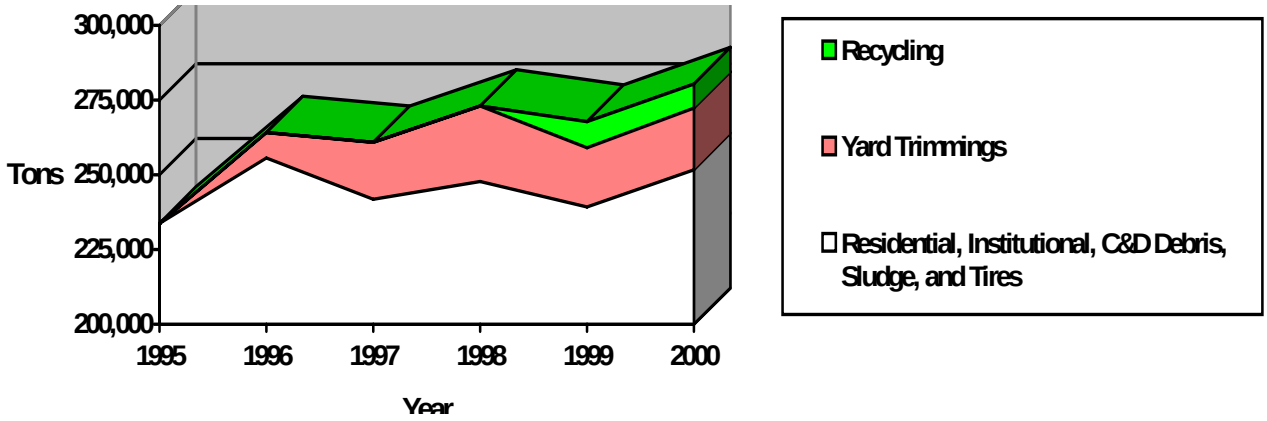
Figure 2-1 provides waste generation trends in the City of Atlanta for the past 3 years (2001 to 2003). It should be noted that some data were not available for some months or quarters in these years. Yard trimmings data were only available for the amount the City collected, and does not include private landscaping companies. Also, for some waste sectors (sludge and tires), data were only available for 2003.

FIGURE 2-1
Waste Generating Trends in the City of Atlanta (2001-2003)



Data from the years 2001 through 2003 were used for this analysis, because the most consistent data for both the City of Atlanta and private waste hauling companies were available for these years. Private waste hauling data prior to 2001 were not available or complete. However, data from what the City of Atlanta collects were available for the years 1995 through 2000. These waste disposal, yard trimmings generation, and recycling trends for the City of Atlanta collections are provided in Figure 2-2. It should be noted that separate yard trimmings collection did not begin until 1996 in the City of Atlanta. Recycling data prior to 1999 were not available.

FIGURE 2-2
Waste Generating Trends for the City of Atlanta Collections Not Including Private Waste Haulers (1995-2000)



2.1.1 Residential Waste Generation

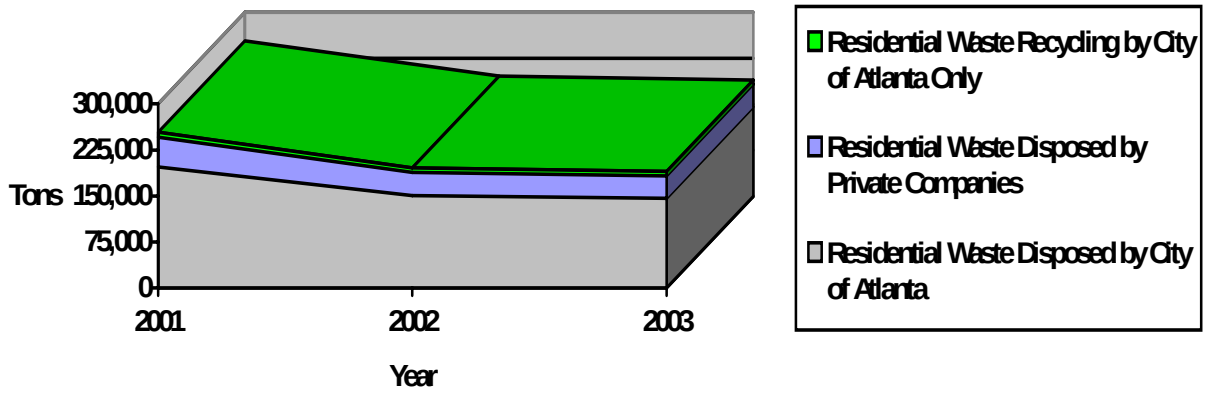
Residential solid waste is collected by the City of Atlanta from two primary sources: single-family and multi-family residences. The City services approximately 87,000 single-family units and 33,600 multi-family units weekly. Private hauling companies also collect solid waste from residential multi-family units and services approximately 63,762 multi-family residences in the City of Atlanta.

Until December of 2004, the City of Atlanta disposed of its residential and institutional solid waste at Waste Management Incorporated's Live Oak Landfill in DeKalb County, and solid waste data used in this Plan were obtained from Live Oak Landfill records. In 2003, the City of Atlanta collected 146,101 tons of residential solid waste for disposal at Live Oak Landfill. Approximately 6,985 tons of recyclable material were collected by the City for recycling.

Since private hauling companies that service multi-family residences in the City of Atlanta are not required to report the tonnage of residential waste collected to the City, typical multi-family generation rates from other cities were used to estimate the amount of solid waste collected. It was estimated that multi-family units produce approximately 45 percent of the amount of solid waste that single-family units produce. Therefore, for the 63,762 multi-family residences served by private companies, it was estimated that approximately 36,422 tons of solid waste were collected. In interviews with five major private waste haulers that collect residential waste from the city, it was reported that they provide some residential recycling to multi-family units. Recycling data from these companies, however, were not available.

Figure 2-3 provides residential waste generation and recycling trends in the City of Atlanta for the past 3 years. The figure indicates that the amount of waste generated by residential units has decreased.

FIGURE 2-3
Residential Waste Generation Trends in the City of Atlanta



2.1.2 Commercial Waste Generation

Approximately 20,000 commercial establishments exist within the city limits of Atlanta. In 2000, approximately 182,936 employees were in the City. The commercial waste stream consists of waste from facilities such as County, State, and federal governmental facilities,

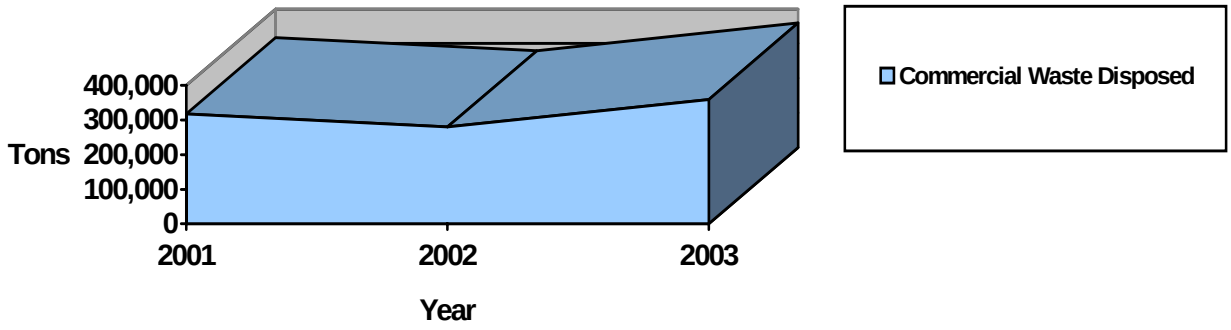
sports facilities, exhibit halls, convention centers, museums, theaters, shopping areas, airports, restaurants, nightclubs, hotels, colleges, universities, hospitals, corporate offices, some multi-family residential housing, and many other retail, wholesale, and service establishments. Consequently, because of the large number of persons commuting into the City for work and recreation, it is expected that the commercial waste volume in Atlanta is higher on a per capita basis than in most communities.

In the City of Atlanta, commercial solid waste is collected by private hauling companies and includes commercial non-residential solid waste, some institutional solid waste, and industrial-sector solid waste. These private hauling companies are not required to provide the City with tonnage information for waste collected from the commercial sector. Since no reports are available to provide actual tonnage data, to estimate the amount of commercial waste generated for the purposes of this Plan, the Georgia EPD Private Disposal Landfill Reports were used. The quarterly landfill reports provide the amount of commercial solid waste delivered from private haulers and denote what municipality the waste comes from. The landfill reports may include tonnages from metro Atlanta, since private haulers may have only reported Atlanta as the jurisdiction from which the waste was collected, instead of the City of Atlanta only. It should also be noted that some data were not available for some quarters of the year.

In 2003, private haulers collecting solid waste from the City of Atlanta delivered approximately 359,958 tons of commercial solid waste for disposal to four private landfills: Oak Grove Landfill in Barrow County, Pine Ridge Landfill in Butts County, Live Oak Landfill in DeKalb County, and Eagle Point Landfill in Forsyth County. Commercial recycling data were not available for the City of Atlanta. The City needs to collect more data associated with the commercial waste sector, and in response to this need, the City is considering implementing a reporting system requiring haulers and recyclers who collect waste within the City to report this information directly to the City.

Figure 2-4 provides commercial waste disposal trends in the City of Atlanta for the past 3 years. The amount of commercial waste generated within the City has increased by 42,606 tons from 2001 to 2003.

FIGURE 2-4
Commercial Waste Generation Trends in the City of Atlanta



2.1.3 Institutional Waste Generation

The City of Atlanta collects institutional solid waste from City-owned buildings and facilities. The City collected approximately 741 tons of institutional waste from City-owned buildings in 2003. Some City buildings recycle their office wastes; however, recycling data were not available.

Institutional solid waste that is not collected by the City is collected by private haulers and is included in their commercial solid waste collection figures, as discussed in Section 2.1.2, Commercial Waste Generation.

2.1.4 Industrial Waste Generation

The quantity of waste generated by industrial processes in Atlanta is relatively small and is handled entirely by private haulers and disposal facilities. For the purposes of this Plan, the solid waste generated at industrial facilities is considered to be handled as commercial solid waste, and is included in Section 2.1.2, Commercial Waste Generation. The other waste generated by industrial facilities is classified as hazardous waste, which is not addressed in this Comprehensive Solid Waste Management Plan (SWMP).

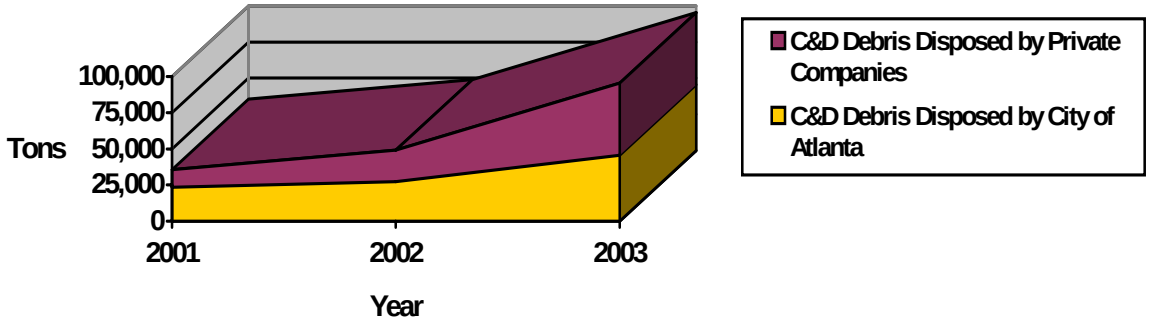
2.1.5 Construction and Demolition (C&D) Debris Generation

In the City of Atlanta, C&D debris is collected by both private haulers and the City of Atlanta and is disposed of in private C&D landfills. The City of Atlanta previously sent C&D debris to Live Oak Landfill, which is a municipal solid waste (MSW) landfill. Since the City is now currently using transfer stations (discussed further in Section 5, Disposal Element), which do not accept C&D debris, the City will now begin using private dedicated C&D landfills for C&D disposal. No C&D recycling program currently exists in the City of Atlanta, and there are also no C&D recycling facilities in Georgia. In 2003, the City of Atlanta collected 45,521 tons of C&D debris.

Data on C&D debris collected by private haulers were obtained from EPD's Private C&D Debris Disposal Landfill reports. In 2003, private haulers collected approximately 49,820 tons of C&D debris from the City and delivered the debris to four private C&D landfills for disposal: Rogers Lake Road C&D and APAC/GA Donzi Lane Landfills in DeKalb County, Eagle Point Landfill in Forsyth County, and Reliable Tire Service Landfill in Hall County. Small amounts of C&D debris are also sent to municipal solid waste landfills. In 2004, approximately 6 percent of the solid waste at municipal solid waste landfills was C&D debris.

Figure 2-5 provides C&D debris disposal trends in the City of Atlanta for the past 3 years. EPD's C&D landfill reports may include tonnages from metro Atlanta, since private haulers may have reported Atlanta as the jurisdiction where the waste came from, instead of the City of Atlanta only. It should also be noted that some data were not available for some quarters of the year. The figure indicates that the amount of C&D debris disposed has increased significantly since 2001. This increase could be due to the fact that the majority of C&D debris was disposed in MSW landfills in the past, and the data show an increase in the use of dedicated C&D landfills for disposal, since MSW landfills typically charge a higher tipping fee to accept C&D debris when compared to C&D landfills. The increase in C&D debris generation may also be a result of increased development in the City of Atlanta.

FIGURE 2-5
C&D Debris Disposal Trends in the City of Atlanta

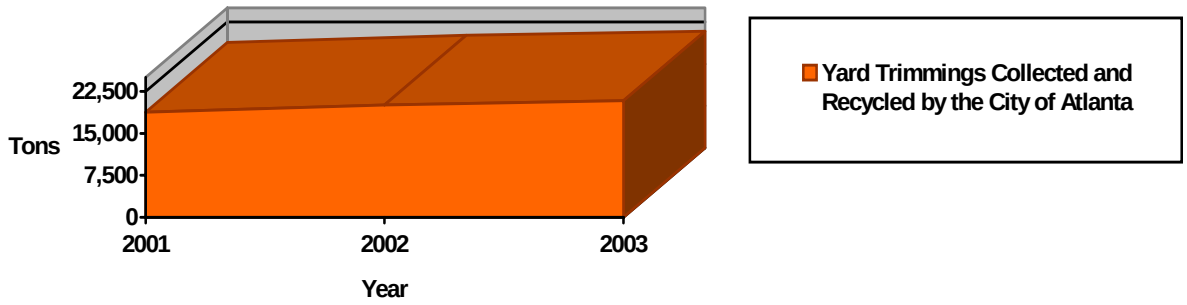


2.1.6 Yard Trimmings Generation

In 1996, the City began collecting yard trimmings separately from residential refuse. In 2003, the City collected approximately 20,837 tons of yard waste. The City does not dispose of yard trimmings, but instead processes the yard trimmings and sells the material for reuse as boiler fuel to various mills. Yard trimmings disposal and recycling data from private companies were not available. In phone interviews conducted with three major landscaping companies that operate within the City, it was reported that yard trimmings are both recycled and disposed. These companies stated that recycling yard trimmings consisted mostly of mulching and composting, while disposing yard trimmings involved sending yard trimmings to inert landfills.

Figure 2-6 provides trends in the amount of yard trimmings generated in the City (by the City of Atlanta only) for the past 3 years. The amount of yard trimmings increased by 2,019 tons from 2001 to 2003.

FIGURE 2-6
Yard Trimmings Generation Trends in the City of Atlanta



2.1.7 Water and Wastewater Treatment Plant Sludge

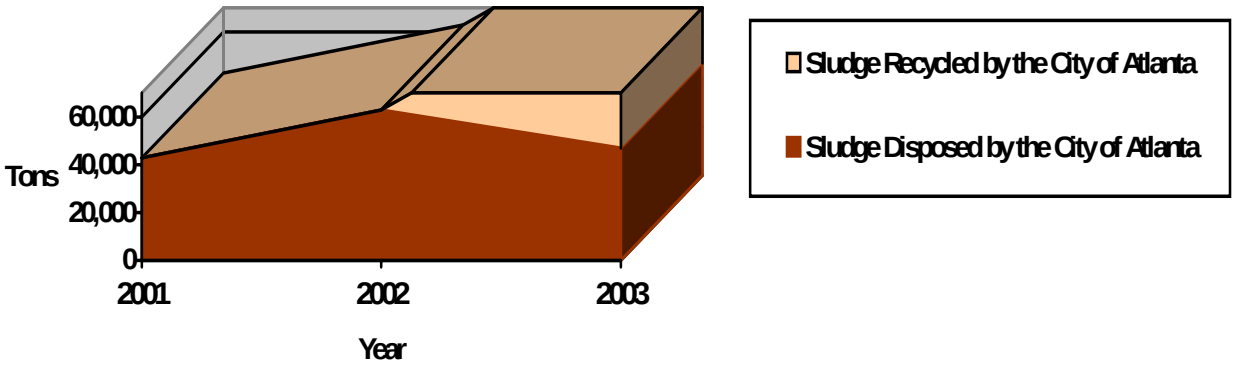
Sewage sludge and other similar wastes are not considered residential or commercial solid waste; however, information about sludge is provided in this Plan as additional information for planning purposes. This section only covers sludge generated from City-owned

treatment systems, such as water and wastewater treatment plants, and combined sewer overflows. For the purposes of this Plan, sludge also includes grit and other non-sludge waste, such as catch-basin trash, rocks, wood, branches, and gravel.

In 2003, approximately 118,725 tons of sludge were generated from City-owned treatment works. Of this amount, approximately 46,984 tons were sent to Live Oak Landfill for disposal. The remaining 71,741 tons were incinerated at the treatment works, and the ash was sent to a brick facility for recycling as an amendment in the manufacturing of bricks.

Figure 2-7 provides trends in the amount of sludge generated by the City of Atlanta for the past 3 years. The total amount of sludge disposed was available for 2001 through 2003; however, the total amount of sludge incinerated/recycled was not available for 2001 and 2002.

FIGURE 2-7
Sludge Generation Trends in the City of Atlanta



2.1.8 Used Tire Generation

Currently, the City picks up tires when they are identified at illegal dump sites. Courtesy notices, which are reminders about proper curbside set-outs, are left with residences if tires are placed at the curbside. Residents and businesses are expected to deliver used tires to auto mechanic shops, tire shops, or tire recycling vendors. The City takes the tires it collects to a tire recycling vendor. In 2003, the City collected approximately 88 tons of tires for recycling.

Data on tires collected by private companies for disposal or recycling were not available through Georgia EPD or DCA. Therefore, to estimate the amount of tires disposed and recycled by private companies, U.S. data were used. There is an estimated national tire generation rate of 1.03 tires per person ("U.S. Scrap Tire Markets: 2003 Edition," Rubber Manufacturers Association, July 2004). Applying this number to the total population in the City of Atlanta, and using an average weight of passenger and truck tires, it is estimated that approximately 5,833 tons of tires are generated in the City of Atlanta annually. Subtracting the amount of tires collected by the City of Atlanta, it is estimated that private companies collect approximately 5,745 tons of tires for recycling or disposal.

A national trend of 80.4 percent recycling of tires ("U.S. Scrap Tire Markets: 2003 Edition," Rubber Manufacturers Association, July 2004) was also applied to the total population in the City of Atlanta, to determine the amount of tires recycled by private companies. It was

estimated that private companies recycle approximately 4,601 tons of tires from the City of Atlanta, and dispose of 1,144 tons. Tire data were not available for years prior to 2003.

2.2 Waste Disposal Characterization

Table 2-2 provides a breakdown of the types of waste disposed for the residential and commercial sectors in the ARC's RDC, which includes the following counties: Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, and Rockdale. Waste stream sampling data were obtained from the Georgia DCA and R.W. Beck, and sampling was conducted in each of four seasons beginning in 2004. The waste stream sampling data provide draft results for the metro Atlanta region. It is assumed that the draft results for the metro Atlanta region are similar to what would be expected in the City of Atlanta.

The types of waste disposed and the amount of each type of waste will help the City determine which materials can potentially be diverted from disposal. The City already diverts materials such as newspaper, office paper, junk mail, aluminum and other metal cans, glass, plastic, phone books, yard trimmings, corrugated cardboard, and tires from disposal.

2.3 Fluctuations in the Quantity of Solid Waste Disposed

To anticipate fluctuations in the quantity of solid waste disposed, the City of Atlanta must account for known events such as seasonal variations in population, public events (that is, fairs, festivals, concerts), shifts in manufacturing or production processes, landfill bans, and the like.

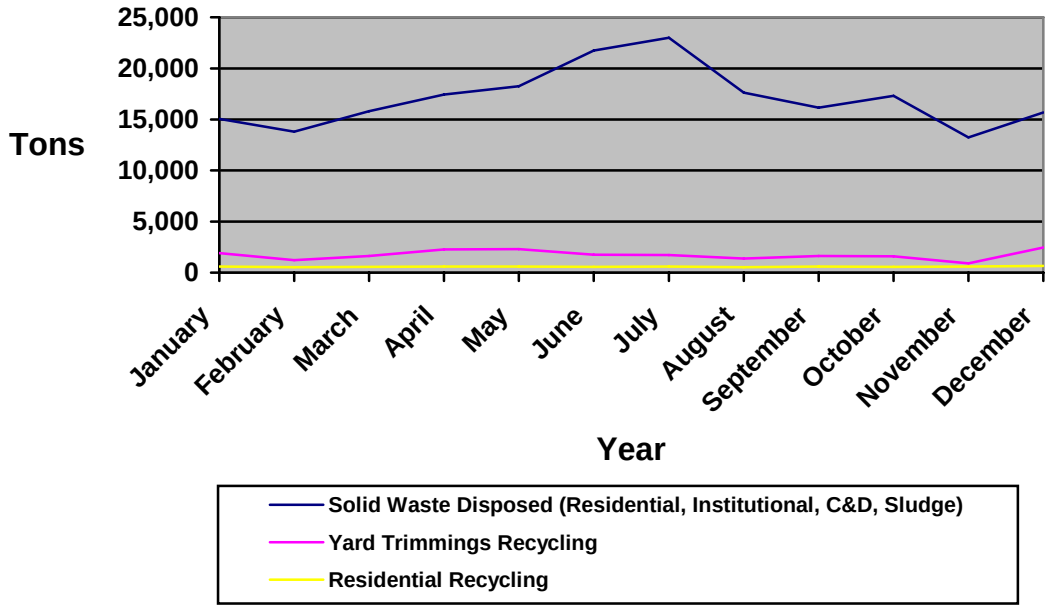
Figure 2-8 provides monthly trends in solid waste disposed (includes residential, institutional, C&D, and sludge), yard waste recycling, and residential recycling for 2003. The figure only provides data on solid waste collected by the City of Atlanta, and does not include private collection, since private monthly collection data were not available. This figure shows an increase in solid waste disposed during the summer months in 2003. It is typical for summer months to have increased solid waste disposal amounts. The City of Atlanta is capable of handling this seasonal increase. The yard trimmings generation rate in 2003 remained fairly steady, with typical increases in the spring and winter months.

TABLE 2-2
Waste Composition of MSW Landfills Receiving Waste from the City of Atlanta in 2004

Material Group	Material Category	Residential (%)	Commercial (%)
Paper	Newspaper	6.8	3.0
	Corrugated Cardboard	5.6	15.0
	Office	3.2	4.5
	Magazine/Glossy	3.4	1.3
	Paperboard	4.8	2.1
	Mixed Paper (Other Recyclable)	3.5	2.9
	Other Paper (Non-recyclable)	10.7	11.5
	Total Paper (%)	**37.9**	**40.2**
Plastic	#1 Polyethylene Terephthalate (PET #1) Bottles	1.6	1.2
	#2 High-density polyethylene (HDPE) Bottles	1.4	1.1
	#3 - #7 Bottles	0.3	0.1
	Expanded Polystyrene	1.5	1.2
	Film Plastic	7.8	7.3
	Other Rigid Plastic	4.4	4.3
	Total Plastic	**17.0**	**15.2**
Glass	Clear	2.5	1.6
	Green	0.5	0.5
	Amber	1.3	1.3
	Other	0.5	0.2
	Total Glass	**4.8**	**3.6**
Metal	Steel Cans	1.7	0.9
	Aluminum Cans	0.9	0.5
	Other Ferrous	1.8	3.5
	Other Non-Ferrous	0.6	0.6
	Total Metal	**4.9**	**5.5**
Organic	Yard Waste	1.0	3.4
	Wood (non-C&D)	1.5	1.5
	Food Waste	13.6	13.4
	Textiles	5.2	2.8
	Diapers	3.5	1.6
	Fines	2.8	2.7
	Other Organics	1.2	0.6
	Total Organic	**28.8**	**26.0**
Inorganic	Televisions	0.0	0.0
	Computers	0.0	0.0
	Other Electronics	1.6	2.0
	Tires	0.0	0.3
	Household Hazardous Waste	0.3	0.8
	Other Inorganics	1.0	0.5
	Total Inorganic	**2.9**	**3.7**
C&D	Drywall	0.4	0.6
	Wood	1.1	2.3
	Inerts	0.1	0.4
	Carpet	1.5	1.8
	Other C&D	0.6	0.7
	Total C&D	**3.8**	**5.8**

Source: R.W. Beck and Georgia Department of Community Affairs.

FIGURE 2-8
Monthly Fluctuations in Waste Collected by the City of Atlanta in 2003



2.4 Waste-Generating Disasters

The City of Atlanta has emergency procedures in place to handle waste-generating disasters. Section 3.4, Waste Reduction Alternatives for Waste-Generating Disasters, provides details on how the City will manage significant increases in volumes of waste resulting from disasters. Section 4.7, Contingency Strategies, provides information about emergency collection procedures in the event of a waste-generating disaster or in the event the primary collection option becomes interrupted. That section also, describes emergency procedures in the event that the current disposal option becomes interrupted.

In the event of a waste-generating disaster, the City of Atlanta has Emergency Response Standard Operating Procedures in place, also known as the Emergency Response Plan. This document outlines the DPW's responsibilities during an emergency and the level of interaction with other agencies. The plan also establishes emergency communication, emergency protocol guidelines and procedures, and the type of emergencies covered by the plan.

Monthly fluctuations in waste generation rate from other years showed trends similar to that in Figure 2-8. The yard trimmings generation rate tends to increase during the spring and winter months. Based on an analysis of trends during years of storm events, there was no significant increase in yard trimmings over the months of the year. For projecting waste-generation quantities for the planning period, the City expects the waste-generation rate to remain fairly steady.

2.5 Waste Generation, Disposal, and Recycling Rates for the Planning Period

Based on population projections, trends in job growth, building starts and demolitions, unique conditions and seasonal variations, and the potential for waste-generating disasters, the anticipated waste amounts for the 10-year planning period were projected. Per capita per day waste generation rates were estimated and applied to several generating sectors to calculate projected waste amounts.

2.5.1 Population

The 2000 Census population for the City of Atlanta was 416,474. ARC prepared population estimates for 2004 and estimated a population of 434,900 for the City of Atlanta (News Release, August 2004). ARC population projections indicate that the City of Atlanta has experienced an average annual growth of 1.1 percent (4,607 new residents) between 2000 and 2004. The City of Atlanta's Department of Planning and Community Development has projected population growth for the City as shown in Table 2-3 (Comprehensive Development Plan [CDP], December 2003):

TABLE 2-3
City of Atlanta Population Projections for 2004-2015

Year	Projected Population
2004	434,900
2005	438,393
2006	441,781
2007	445,169
2008	448,556
2009	451,944
2010	455,332
2011	461,178
2012	467,024
2013	472,870
2014	478,716
2015	484,562

Source: Population estimates based on ARC 2003 Forecasts, and the City of Atlanta Bureau of Planning Forecast Interpolations, "Comprehensive Development Plan," December 2003.

2.5.2 Residential Waste Generation Rate

In 2003, the City of Atlanta generated approximately 189,508 tons of residential (single-family and multi-family) solid waste. The estimated population in 2003 for the City of Atlanta was 432,900 people (ARC, 2003). Based on this information, the residential waste-generation rate in the City of Atlanta for 2003 was 2.4 pounds per capita per day. For the

planning period of 2004 through 2015, the residential waste-generation rate is expected to remain fairly steady, not fluctuating significantly. Table 2-4 presents the projected residential waste generation rates based on the projected population growth for the City of Atlanta for the 10-year planning period.

TABLE 2-4
Projected Residential Solid Waste Generation Rates in the City of Atlanta for 2004-2015

Year	Projected Population (persons)	Projected Residential Solid Waste Generation [Generation Rate of 2.4 lbs/capita/day] (tons)
2004	434,900	190,384
2005	438,393	191,913
2006	441,781	193,396
2007	445,169	194,879
2008	448,556	196,362
2009	451,944	197,845
2010	455,332	199,328
2011	461,178	201,887
2012	467,024	204,446
2013	472,870	207,005
2014	478,716	209,565
2015	484,562	212,124

Notes:

1) Residential waste-generation rate is estimated at 2.4 lbs/capita/day.
2) The following conversion units were used in the calculations; 1 ton = 2,000 pounds and 1 year = 365 days.

2.5.3 Commercial, Institutional, and Industrial Waste Generation Rates

In 2003, the City of Atlanta disposed of approximately 359,555 tons of commercial, institutional, and industrial solid waste. This disposal estimate does not account for the amount of commercial, institutional, and industrial waste that was recycled but not reported to the City. The estimated employment population in 2003 for metro Atlanta was 445,559 employees (City of Atlanta Bureau of Planning). Based on these numbers, the commercial, institutional, and industrial solid waste generation rate in the City of Atlanta for 2003 was approximately 4.4 pounds per employee per day. For the planning period, the commercial waste per employee generation rate is expected to remain fairly steady and not fluctuate significantly. Table 2-5 presents the projected waste generation rate based on the projected employment growth for the City of Atlanta for the 10-year planning period.

TABLE 2-5
Projected Commercial, Institutional, and Industrial Solid Waste Per Employee Generation Rate in the City of Atlanta for 2004-2015

Year	Projected Employees[1] (persons)	Projected Commercial, Institutional, and Industrial Solid Waste Generation Rate [Generation Rate of 4.4 lbs/employee/day] (tons)
2004	448,221	362,854
2005	450,883	365,009
2006	453,545	367,164
2007	456,207	369,319
2008	458,870	371,475
2009	461,532	373,630
2010	464,194	375,785
2011	468,818	379,528
2012	473,442	383,272
2013	478,065	387,014
2014	482,689	390,757
2015	487,313	394,501

Notes:

[1] Number of employees in metro Atlanta. ARC Atlanta Employment Forecast for 2000-2030.

In comparing the 2003 commercial, institutional, and industrial solid waste generation to a per capita rate, the City of Atlanta had a population of approximately 432,900 persons in 2003. Therefore, on a per capita basis, the commercial, institutional, and industrial solid waste generation rate in the City of Atlanta for 2003 was approximately 4.6 pounds per capita per day. For the planning period, the commercial waste per capita generation rate is expected to remain fairly steady and not fluctuate or increase significantly. Table 2-6 presents the projected waste generation rate based on the projected population growth for the City of Atlanta for the 10-year planning period. For the purposes of projecting waste disposal volumes for the planning period, the per capita commercial, institutional, and industrial solid waste generation rate was used.

TABLE 2-6
Projected Commercial, Institutional, and Industrial Solid Waste Per Capita Generation Rate in the City of Atlanta for 2004-2015

Year	Projected Population (persons)	Projected Commercial, Institutional, and Industrial Solid Waste Generation Rate [Generation Rate of 4.6 lbs/capita/day] (tons)
2004	434,900	362,365
2005	438,393	365,276
2006	441,781	368,099

TABLE 2-6
Projected Commercial, Institutional, and Industrial Solid Waste Per Capita Generation Rate in the City of Atlanta for 2004-2015

Year	Projected Population (persons)	Projected Commercial, Institutional, and Industrial Solid Waste Generation Rate [Generation Rate of 4.6 lbs/capita/day] (tons)
2007	445,169	370,921
2008	448,556	373,744
2009	451,944	376,567
2010	455,332	379,390
2011	461,178	384,261
2012	467,024	389,132
2013	472,870	394,003
2014	478,716	398,874
2015	484,562	403,745

2.5.4 C&D Debris Generation Rate

In 2003, private haulers and the City of Atlanta collected approximately 95,341 tons of C&D debris from the City of Atlanta for disposal. Due to the increase in the amount of C&D debris from the City of Atlanta from 2002 to 2003, it is assumed that the amount of C&D debris will increase by 30 percent from 2003 to 2004. It is assumed that C&D debris will continue to increase by 30 percent for 3 years, and then start gradually declining to 1 percent by the end of the planning period, as efforts to recycle and divert C&D debris from C&D landfills increase.

Table 2-7 presents the projected C&D debris generation for the City of Atlanta for the 10-year planning period.

TABLE 2-7
Projected C&D Debris Generation in the City of Atlanta for 2004-2015

Year	Projected C&D Debris Generation (tons)	Percent Increase from Previous Year (%)
2004	123,943	30
2005	161,126	30
2006	209,464	30
2007	251,357	20
2008	276,493	10
2009	304,142	5
2010	319,349	3
2011	328,930	2
2012	335,509	2

TABLE 2-7
Projected C&D Debris Generation in the City of Atlanta for 2004-2015

Year	Projected C&D Debris Generation (tons)	Percent Increase from Previous Year (%)
2013	338,864	1
2014	342,253	1
2015	345,676	1

2.5.5 Yard Trimmings Generation Rate

In 2003, the City of Atlanta collected approximately 20,837 tons of yard trimmings, and processed the yard trimmings for reuse as boiler fuel for various mills. Yard trimmings disposal and recycling data from private companies were not available. From 1997 to 2003, the amount of yard trimmings collected by the City of Atlanta increased by approximately 252 tons per year. Therefore, this amount was used to project the amount of yard trimmings generation for the City. Table 2-8 presents the projected yard trimmings generation for the City of Atlanta for the 10-year planning period.

TABLE 2-8
Projected Yard Trimmings Generation in the City of Atlanta for 2004-2015

Year	Projected Yard Trimmings Generation (tons)
2004	21,089
2005	21,341
2006	21,593
2007	21,845
2008	22,097
2009	22,349
2010	22,601
2011	22,853
2012	23,105
2013	23,357
2014	23,609
2015	23,861

2.5.6 Water and Wastewater Treatment Plant Sludge Disposal Rate

In 2003, the City of Atlanta disposed of approximately 46,984 tons of sludge, and incinerated and recycled approximately 71,741 tons of sludge. The only historical data available for sludge were the amount of sludge disposed in 1992 (1995 City of Atlanta Comprehensive Solid Waste Management Plan). The amount of sludge recycled or incinerated in 1992 was not available. In 1992, the amount of sludge disposed by the City of Atlanta was 18,299 tons. From 1992 to 2003, the amount of sludge disposed increased by approximately 14.25 percent

each year, or 2,608 tons per year. Therefore, this amount was used to project the amount of sludge disposal for the City. Table 2-9 presents the projected sludge disposal amounts for the City of Atlanta for the 10-year planning period.

TABLE 2-9
Projected Sludge Disposal Amounts in the City of Atlanta for 2004-2015

Year	Projected Sludge Disposal (tons)
2004	49,592
2005	52,200
2006	54,808
2007	57,416
2008	60,024
2009	62,632
2010	65,240
2011	67,848
2012	70,456
2013	73,064
2014	75,672
2015	78,280

2.5.7 Tire Disposal Rate

Historical data were not available for tire disposal, so a percentage projection trend could not be applied to the amount of tires disposed each year. Therefore, a 1 percent increase in tire disposal each year was assumed. In 2003, approximately 1,144 tons of tires were disposed in the City of Atlanta. Using a figure of 1 percent increase per year increases the tire disposal tonnage by 11 tons per year. Therefore, this amount was used to project the amount of tire disposal for the City. Table 2-10 presents the projected tire disposal amounts for the City of Atlanta for the 10-year planning period.

2.5.8 Residential Recycling Rate

In 2003, approximately 6,985 tons of residential solid waste from single- and multi-family residences serviced by the City were collected for recycling. Residential recycling data from private waste companies were not available.

The estimated population in 2003 for the City of Atlanta was 432,900 people (ARC, 2003). Based on these numbers, the residential recycling rate in the City of Atlanta for 2003 was approximately 0.09 pound per capita per day. This rate is presumably higher because some residents may utilize drop-off centers or other mechanisms for recycling. The amount of residential solid waste disposed has also decreased steadily since 2001 (see Figure 2-2), which indicates an increase in source reduction and/or recycling. Table 2-11 presents the

projected residential recycling amounts for the City of Atlanta for the 10-year planning period.

TABLE 2-10
Projected Tire Disposal Amounts in the City of Atlanta for 2004-2015

Year	Projected Tire Disposal (tons)
2004	1,155
2005	1,166
2006	1,177
2007	1,188
2008	1,199
2009	1,210
2010	1,221
2011	1,232
2012	1,243
2013	1,254
2014	1,265
2015	1,276

TABLE 2-11
Projected Residential Recycling Amounts in the City of Atlanta for 2004-2015

Year	Projected Residential Recycling Amounts (tons)
2004	7,017
2005	7,074
2006	7,128
2007	7,183
2008	7,238
2009	7,292
2010	7,347
2011	7,441
2012	7,536
2013	7,629
2014	7,724
2015	7,819

2.6 Waste Disposal Tonnages for the Planning Period

The projected waste generation and recycling amounts for each sector were used to determine the projected waste to be disposed of for the 10-year planning period. This waste disposal projection does not account for waste reduction initiatives (such as increased recycling efforts, waste-to-energy solutions, etc.) and thus only estimates waste amounts based on status quo operations.

In Section 2.7, Municipal Solid Waste Disposal Reduction Goal, waste reduction initiatives were accounted for in determining the City's annual municipal solid waste disposal reduction target/goal.

Figure 2-9 summarizes the projected amount of waste to be disposed by sector for the 10-year planning period. It should be noted that per capita generation rates were used for the commercial, institutional, and industrial waste disposal projection, and not the per employee generation rate. Also, Figure 2-9 does not include projected yard trimmings or residential recycling, since these materials are not disposed of in a landfill.

FIGURE 2-9
Projected Waste Disposal Volumes by Sector for the City of Atlanta for 2004-2015

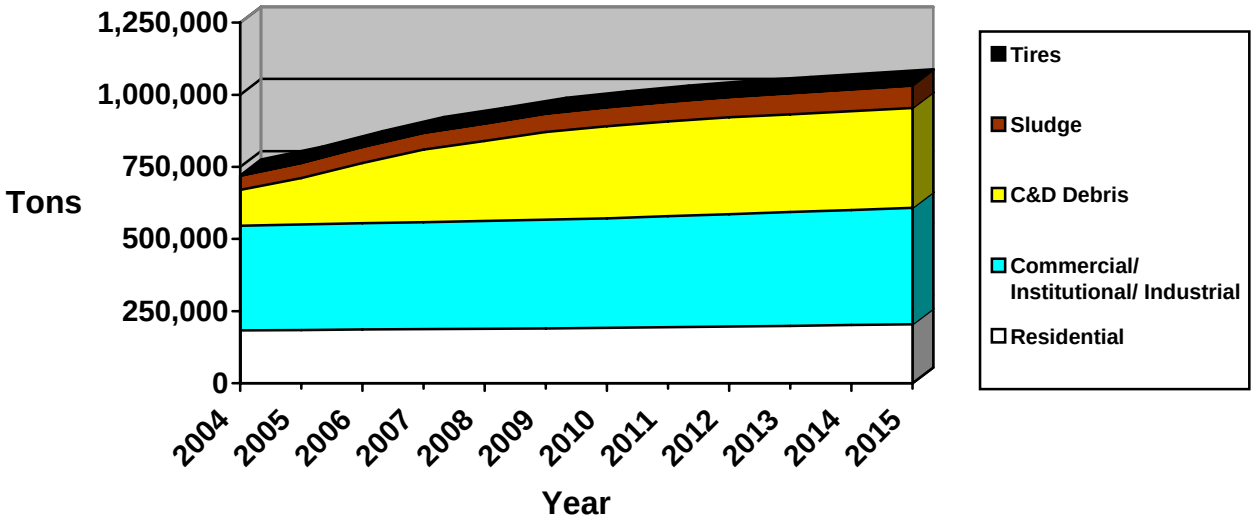


Table 2-12 presents the amount of disposal capacity required by the City of Atlanta for the planning period.

TABLE 2-12
Projected Waste Disposal Amounts in the City of Atlanta for 2004-2015

Year	Projected Waste Disposed (tons)
2004	720,922
2005	764,607
2006	819,816
2007	868,578

TABLE 2-12
Projected Waste Disposal Amounts in the City of Atlanta for 2004-2015

Year	Projected Waste Disposed (tons)
2008	900,584
2009	935,104
2010	957,181
2011	976,717
2012	993,250
2013	1,006,561
2014	1,019,905
2015	1,033,282

2.7 Municipal Solid Waste Disposal Reduction Goal

The Georgia Comprehensive Solid Waste Management Act (O.C.G.A. §12-8-20) set forth the State's waste reduction goal, which requires a 25 percent per capita reduction rate in the amount of solid waste being disposed, from a 1992 baseline year. Table 2-13 presents the per capita rate of solid waste disposed by the City of Atlanta in 1992, and the per capita rate of solid waste disposed in 2003, for three main categories: (1) total waste disposed (including City of Atlanta and private waste haulers, (2) total waste disposed by just the City of Atlanta (not including private waste haulers), and (3) total waste disposed by just the City of Atlanta and not including sludge disposal.

As shown in Table 2-13, there has been an 11 percent decrease in the per capita disposal of all waste in the City of Atlanta since 1992. This decrease includes both the City of Atlanta's collections and private waste hauler collections. Therefore, the City of Atlanta has not achieved the State's 25 percent per capita waste reduction goal.

In further analyzing the amount of solid waste disposed from just the City of Atlanta collections, the per capita disposal reduction from 1992 is actually 25 percent, which meets the State's reduction goal. If sludge disposal were removed from the analysis, the per capita reduction increases to 36 percent. Therefore, it can be seen that the 11 percent per capita reduction is impacted by commercial private waste disposal and C&D debris. The extent to which commercial private waste disposal has impacted the 11 percent per capita reduction has not been determined, since the City has insufficient data on the amount of commercial recycling conducted by private waste companies. Commercial recycling may show a reduction percentage comparable to the City of Atlanta's 25 percent reduction. The amount of C&D debris disposal impacts the 11 percent per capita reduction, since there is no current C&D debris recycling in the City and C&D debris contributed over 95,000 tons of disposed waste in 2003. This analysis shows a need for the City to gather more accurate data on commercial solid waste disposal and recycling and to investigate whether commercial recycling is being effective in reducing commercial solid waste. There is also a need to research the potential for C&D debris recycling programs and new C&D recycling facilities.

In order to meet the State's 25 percent per capita reduction in solid waste disposal, the City will promote source reduction, reuse, composting, recycling, and other waste reduction programs. The new waste reduction, collection, disposal, and education and public involvement programs identified in this SWMP will help the City achieve this goal.

Table 2-14 provides the waste reduction goal projections for the 10-year planning period. In 1992, the per capita waste disposal rate for the City of Atlanta was 9.77 pounds per capita per day. Therefore, to meet the 25 percent reduction goal each year, the City of Atlanta must ensure that a per capita waste disposal rate is at or below 7.33 pounds per capita per day.

TABLE 2-13
Per Capita Reduction Rate in Municipal Solid Waste for the City of Atlanta (1992 vs. 2003)

	1992			2003			Percent Reduction from 1992 (%)
	Waste Disposed (tons)	**Population (persons)**	**Waste Disposal Rate (lbs/capita/day)**	**Waste Disposed (tons)**	**Population (persons)**	**Waste Disposal Rate (lbs/capita/day)**	
Total Waste Disposed (Includes both the City and Private Haulers)	740,162[1]	415,200[2]	9.77	685,547	432,900	8.68	**11**
Total Waste Disposed by the City (Does not include Private Haulers)	306,232	415,200	4.04	239,347	432,900	3.03	**25**
Total Waste Disposed by the City Not Including Sludge (Does not include Private Haulers)	287,933	415,200	3.80	192,363	432,900	2.43	**36**

Notes:

[1] From 1995 City of Atlanta Comprehensive Solid Waste Management Plan. Includes residential, sludge, and commercial waste disposed. Residential and sludge amounts were obtained from City records. Commercial waste data were obtained from Georgia EPD Private Disposal Landfill Reports.

[2] Population in City of Atlanta in 1990. U.S. Census Bureau.

TABLE 2-14
Waste Disposal Target for the City of Atlanta for the 10-Year Planning Period

Year	Projected Population (persons)	Waste Disposal Rate Goal (lbs/capita/day)	Projected Waste Disposed (tons)	Percent Reduction from 1992 (%)
2004	434,900	7.33	581,777	25
2005	438,393	7.33	586,449	25
2006	441,781	7.33	590,981	25
2007	445,169	7.33	595,514	25
2008	448,556	7.33	600,045	25
2009	451,944	7.33	604,577	25
2010	455,332	7.33	609,109	25
2011	461,178	7.33	616,929	25
2012	467,024	7.33	624,750	25
2013	472,870	7.33	632,570	25
2014	478,716	7.33	640,390	25
2015	484,562	7.33	648,211	25